Original Paper

Efficacy of a Theory-Based Cognitive Behavioral Technique App-Based Intervention for Patients With Insomnia: Randomized Controlled Trial

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Abstract

Background: Sleep hygiene is important for maintaining good sleep and reducing insomnia.

Objective: This study examined the long-term efficacy of a theory-based app (including cognitive behavioral therapy [CBT], theory of planned behavior [TPB], health action process approach [HAPA], and control theory [CT]) on sleep hygiene among insomnia patients.

Methods: The study was a 2-arm single-blind parallel-group randomized controlled trial (RCT). Insomnia patients were randomly assigned to a treatment group that used an app for 6 weeks (ie, CBT for insomnia [CBT-I], n=156) or a control group that received only patient education (PE, n=156) through the app. Outcomes were assessed at baseline and 1 month, 3 months, and 6 months postintervention. Primary outcomes were sleep hygiene, insomnia, and sleep quality. Secondary outcomes included attitudes toward sleep hygiene behavior, perceived behavioral control, behavioral intention, action and coping planning, self-monitoring, behavioral automaticity, and anxiety and depression. Linear mixed models were used to evaluate the magnitude of changes in outcomes between the two groups and across time.

Results: Sleep hygiene was improved in the CBT-I group compared with the PE group (P=.02 at 1 month, P=.04 at 3 months, and P=.02 at 6 months) as were sleep quality and severity of insomnia. Mediation analyses suggested that perceived behavioral control on sleep hygiene as specified by TPB along with self-regulatory processes from HAPA and CT mediated the effect of the intervention on outcomes.

Conclusions: Health care providers might consider using a CBT-I app to improve sleep among insomnia patients.

Trial Registration: ClinicalTrials.gov NCT03605732; https://clinicaltrials.gov/ct2/show/NCT03605732

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KEYWORDS

app-based intervention; cognitive behavioral therapy, insomnia; sleep hygiene; theory of planned behavior